Fleet Public Health

Navy Environmental Health Center, Norfolk, VA

Navy Environmental and Preventive Medicine
Unit No. 2, Norfolk, VA - Unit No. 5, San Diego, CA - Unit No. 6, Pearl Harbor, HI - Unit No. 7, Sigonella, IT

Vol. 2, No. 2, April 1997 **NEPMU-2 Norfolk, VA Edition**

Route To:

From the OIC:

For the "old hands" in navy preventive medicine and occupational health, the talk about "population-based medicine" and "data driven decision making" may seem as the latest in a long string of "new slogans" that take their place in the sun until a new, catchier phrase comes along. I would argue that this may be the day we have been waiting for. As resources dwindle, medical care in DoD must become the most efficient organization possible. A parallel event is the requirement that many medical commands and units must undertake Commercial Activity (also called A-76) studies to see if outside contractors can do many of our functions cheaper by a factor of 10%. These are pretty dark clouds on the horizon, where is the silver lining in all of this?

The methodology for "population-based medicine" and "data driven decision making" is very similar to what we learned in public health schools and at the navy preventive medicine technician "C" school. This will require us to look at our processes and find ways to evaluate them. Performance indicators, if used appropriately, will allow us to move toward the most efficient organization (MEO) that DoD desperately needs. At this time of declining dollars. I sincerely believe that we produce a product that is among "the best on the block." It is now up to us to show what we can do and how it is less expensive than other alternatives. We have suffered in the past from data calls that required vast amounts of data to be sent up the chain of command, never to be heard from again. Now is the time to develop performance indicators that will help local activities to improve while keeping higher commands informed of our progress. As we rise to meet this challenge, may we remember the famous words of the 1950's cartoon character named Pogo who uttered: "We have met the enemy and he is us."

CAPT Richard Thomas, MC, USN
OIC, NEPMU-2

Inside this issue …

Give the Right Potion!!!

In 1892, Sir William Osler wrote in his textbook, "The Principles and Practice of Medicine," that there were no known remedies to conditions that damage the liver and cause jaundice. This is still the case 100 years later with viral forms of hepatitis. Prevention is still our best defense against hepatitis types A and B. It is crucial that we order the correct immunization and administer the correct dose.

A series of recent events on board one of our ships demonstrates several of these issues. Navy medical personnel potentially exposed to blood or blood products are required to receive the 3 dose hepatitis B vaccine. The hepatitis B vaccine used on this ship had four potential formulations with differing stock numbers and color codes:

Product Type	Strength	Color Code
Pediatric	2.5 mcg/ml	Brown
Adolescents & High Risk Infants	5 mcg/ml	Yellow
Adult	10 mcg /ml	Green
Dialysis	40 mcg/ml	Blue

Crew members were inadvertently administered the blue color-coded preparation intended for patients either on kidney dialysis machines or close to kidney failure instead of the green color-coded adult doses. Fortunately, none of the seven crew members suffered any ill

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..Right Potion, Continued from page 1

effects from receiving four times the normal adult dose. The ship had to report to their local NEPMU of this dosage error. The manufacturer in turn was notified and this event was catalogued on their list of adverse events associated with this immunization. The ship's medical department found they had ordered over $15,000 of the wrong dose, which the manufacturer is not obligated to take back. The manufacturer did take the immunization back because of the small amounts of this dosage manufactured. You might ask "Why was this not picked up in the supply system ? " The NEPMU staff found that ships often now deal directly with medication distributors.

The take home messages are:
1) Order the correct immunization.
2) Look up the immunization in the Physicians' Desk Reference (PDR) or other reference and verify the stock number before you order it. This immunization has fourteen different preparations all with different stock numbers beginning with 6505. In the current stock system, if you order snake oil, you will get snake oil. No one is going to ask you why you are doing this except perhaps, your patients when you tell them "Oops," your XO and Supply Officer when they have to pay for it, or the NEPMU epidemiologists who have to investigate potential adverse outcomes of medications.
3) Make sure your medical staff is comfortable asking "Why is this bottle color-coded blue when we normally give the green color-coded bottles?"
4) Double check the correct doses, especially if you do not give the immunization or medication frequently.
5) Please report any untoward events related to immunizations to your cognizant NEPMU by phone, fax, or e-mail as soon as possible. The ship in this case did the right thing and notified us immediately. They learned a valuable lesson and I hope you will, too.

CAPT R.J. Thomas, MC, USN
OIC, NEPMU- 2

From the S.E.L.

While I was attending college, many of my course require ments were on leadership, management and business ethics. We were inundated with theory and practical applications of these theories. The Navy provided training opportunities, but more importantly, experience. There is no better way to learn than through the "school of hard knocks." With a good foundation of knowledge, functional tools of the trade and ideas to try, you have a much better chance of success. With the new Leadership Continuum courses now available, you will be given opportunity at each level of advancement to fine tune your skills. This is a step in the right direction.

Another area of self improvement on these subjects is reading. There are literally hundreds of books available. One, that intrigues me the most are those found in biblical literature. If you are looking for a few good men and women that have led and managed the masses and have set good examples, and some poor, you can find them in the Bible. It is funny how not much has changed over thousands of years. One advantage of utilizing some of the examples and techniques found here is that you can be sure they are time tested and reliable.

One particular character that interests me is Nehemiah. Born around 2500 years ago, he served as a Cupbearer to a Persian King, over saw a major public works project in Jerusalem and was elected twice as governor of Jerusalem. He was noted for his deep piety and prayer, leadership and organizational ability, compassion for his people, and impeccable integrity.

He was for years, a Cupbearer or taster of the King's food. He had to make sure it was not poisoned prior to the King receiving it. And we complain about our job! Because of his alliance with the King he earned great respect and assistance when needed. He is best known for his return to Jerusalem from Persia to lead an effort to rebuild the city wall, a project he completed in 52 days despite heavy opposition. He also instituted social and political reforms, including the re-

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From the SEL:, ontinued from page 2

population of Jerusalem.

This text was taken from the commentary on the Book of Nehemiah. In this text you can find numerous principles of effective leadership, including the following:

* **Leaders have a sense of mission**. Not a dreamed up sense of mission out of one's own agenda or self-interest.

* **Leaders leverage their power for the good of their people**. A wise and disciplined leader aligns themselves with the powerful on behalf of the powerless. **NETWORKING**. This does not mean sucking up to people to get good fitreps or so you can get advanced. It is a respectful reliance on the powers of others to assist you in accomplishing your mission.

* **Leaders conduct research prior to making decisions**. Gather information by evaluating, studying and seeking wise counsel. Do not assume that the power of your position alone is all that is required to bring about the results you seek.

* **Leaders build community**. Do not create a mentality of us versus them. History show that most of the greatest achievements of humanity have been accomplished by teams and community of people working together toward common ends. Speak in terms of "we" and "us". See yourself as a participant in the circumstances and bridge the class division. Overcome communication barriers. Address individuals as human beings, involve people where they live, respect their limitations, and take a personal interest in their circumstances.

* **Leaders adapt to adversity**. Wise leaders cheerfully expect it! Whenever change and progress are underway, competing interest inevitably rise to challenge them. Leaders must decide whether they accept the challenge and meet it, or turn tail and let their opponents set the agenda. Do you respond to the opposition in appropriate ways, taking practical steps to ensure that the task goes forward, even as others try to shut it down?

* **Leaders resist underhanded politics**. Have a clear conscience, impeccable reputation , and maintain your integrity. Then there can be no ground for accusation against you. No one is perfect, but when mistakes are made address and correct them. Resist the dirty tricks of your opponents and the temptation to "fight fire with fire" by resorting to political games and dirty tricks yourself.

Continued next column

* **Leaders serve people**. Some regard leadership primarily as the art of getting results. Great leaders, they say, are those that get the job done. It matters very little how they operate, as long as they achieve their goals. Great leaders not only should accomplish much, but serve their people. The project should never be an end in itself. The ultimate objective is to revitalize the people. In what way might you serve those who work with you, over you, or for you, so that they gain from the process even as they arry out the work?

* **Leaders celebrate**. Effective leaders appreciate the value of celebrating the great things that God has done in and through their organization. When the task is completed, when results have been achieved, when people have been served, then it is appropriate to have time to celebrate. GIVE THANKS AND BE THANKFUL.

Another aspect, in the whole scheme of things, is the people you are leading. I'll save that for another time.Senior

HMCS(FMF) M. L. Lugo, Senior Enlisted Leader, NEPMU-2

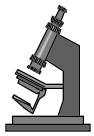
Morbidity & Mortality Weekly Report

The Morbidity and Mortality Weekly Report (MMWR) series is prepared by the Centers for Disease Control and Prevention (CDC) and is available free of charge in electronic format. To receive an electronic copy on Friday of each week, send an E-mail message to <lists@list.cdc.gov>.

The body content should read subscribe mmwr-toc. Electronic copy is also available from CDC's World-Wide Web server at <http://www.cdc.gov/> or from CDC's file transfer protocol server at <ftp.cdc.gov>.

HM1 Nate COUCH, USN,
Navy Environmental Health Center

Even "SUPER DADs" aren't Ten feet tall and Bullet-proof



You never realize just how loud gun shots are until you are sitting by a grave site listening to them for military honors. This was the case for me the summer of 1996. Burying my dad within two months of his 51st birthday was, by far, the hardest thing I've ever had to do. When I began working on a degree in Occupational Safety and Health, I didn't know that 2 years after graduation, I would lose a family member to an asbestos related cancer. Talk about an ironic turn of events.

The "That can't happen to me" syndrome hit me with full force. I had to face the fact that even though I had studied this very topic, there was nothing that I could do. The exposures had already occured, most likely years before anyone in my family had even heard of this obscure little fiber.

To this day, my grandmother still doesn't understand exactly how he got sick. Every time I see her she asks me why this had to happen. I don't have the heart to tell her that a $15 piece of plastic probably could have prevented it. She has no idea what asbestos is or what it's used for. All she knows is that of her ten children, it caused the death of her youngest.

Being an Industrial Hygienist for the Navy, I teach people about asbestos all the time, but all of the education in the world couldn't help me save my dad. The only thing that helps me deal with this is knowing that because Dad helped me through college, he and I both are doing our part to prevent this from happening to someone else. Every time I teach a class or talk to someone on a ship, I think that

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The Operational Preventive Medicine Course...

Will be offered at the Navy Environmental and Preventive Medicine Unit No. 5, Naval Station Box 368143, Bldg. 3235 Albacore Alley, San Diego, CA 92136-5199. Instruction will identify mission critical public health concerns in operational settings, with an emphasis on planning and practical management of preventive medicine operations from pre-deployment to post-deployment. Expert guest speakers as well as staff specialists will discuss topics such as epidemiology, international health care issues, field medical entomology, chemical/biological warfare, industrial hazards of urban warfare, lessons learned from prior armed conflicts, pre-deployment planning, post deployment after action reports, and briefing technique/scenario presentation. A 3-day field exercise will also be conducted. Active duty and reserve Medical Service Corps, Medical Corps, and Nurse Corps Officers and IDCs and PMTs E-7 and above from the Navy, Army, Air Force or Public Health Service are eligible to attend. Students must provide a brief statement on how this course will benefit your current/future billet and command mission. This course has always received good reviews by past participants and is limited to 25 students. Students are responsible for their own travel and lodging. Contact NEPMU5 Training Department for more information at DSN: 526-7086, commercial: (619) 556-7086, e-mail: kbchandler@nepmu5.med.navy.mil.

"... exposures had already occured... years before anyone in my family had even heard of this obscure little fiber."

...Super Dads... Continued from page 3

30 years ago this was my dad. In the eyes of every seaman, petty officer, chief, or officer I see him there. I do for these people what I would have done for him if I'd had the chance.

It's important for everyone to take occupational injuries and illnesses very seriously. It's not something that can be thought about some of the time, it has to be EVERY day. Many of the problems the Navy as well as our civilian counterparts face involve exposures that occur over periods of time. Most people wouldn't jump out of a plane without a parachute, but alot of people enter dangerous environments every day without the proper protective gear. We are aware of occupational hazards now more than ever. Twenty or 30 years ago you didn't hear about things like chemical hazards or respiratory hazards, but now workers are provided with the necessary information through training to help themselves. These rules and instructions are implemented because someone like my dad found out the hard way. Whether it's because it wasn't a known hazard or safety procedures were bypassed doesn't matter. Death, quick or slow is still permanent.

LT A. D. Adkins, MSC,

NEPMU-2

Malaria Review

With the recent events in Central Africa, and the increased possibility of service members infected with malarial parasites transiting our area, we are reminded of the Navy medical laboratory's responsibility to correctly identify this most important of tropical diseases. At NEPMU-7, we offer assistance and training in basic malariology as well as confirmation of presumptive malarial smears to species level.

Malaria patients present with a variety of symptoms. These may include mild to moderate malaise, myalgia, backache, headache, dizziness, fatigue, nausea, vomiting, diarrhea, and a slight fever. This nonspecific profile often results in misdiagnosis as flu, gastroenteritis, or other viral condition, and delays initiation of proper treatment.

Fortunately, one of the lab tests most frequently ordered by clinics and emergency rooms, the complete blood count or CBC, is also adequate for the detection of malaria. Navy lab technicians thus become the last line of defense for the infected sailor whose condition is misdiagnosed. Whether binnacled or returned to duty, precious time is lost while the level of parasitemia rises in the patient, increasing the chance of more serious illness, major organ damage, or even death. The ability to recognize malarial parasites in a CBC is extremely important, and technicians should pay particular attention to red blood cell (RBC) morphology. Parasitized RBCs will be recognizable with the Wright-Giemsa stain used in most hematology departments. Of course, all suspect slides should be reviewed by your department head or pathologist before putting out results.

Duplicates of all blood smears prepared for a suspected case of malaria should be sent to the cognizant NEPMU for confirmation of the diagnosis and species identification. Both stained and unstained, thick and thin smears should be sent, along with pertinent identifying information and clinical history. Call us with any questions about obtaining, preserving, or shipping the blood smears.

Per the "Navy Medical Department Guide To Malaria Prevention And Control," all lab personnel assigned or deployed to malarious areas must be familiar with the proper preparation and staining of malarial blood smears, as well as identification of the various stages of *Plasmodium* parasites in RBCs. To this end, our lab personnel give hands-on training in the history and progression of the disease, as well as the life cycle of the parasite. You'll also master the technique for preparing and staining peripheral blood smears. We have reference and learning materials to supplement the experience here in the lab, and in certain cases, offer site visits to the ship or facility in need of training. Just give us a call with any questions or to schedule training. Ciao!

HMC J. D. Huettner

Laboratory Department, NEPMU-7

The Medical Matrix

The Medical Matrix is published as Medical Surveillance Procedures Manual and Medical Matrix (Edition 5) NEHC6260 TM96-1, April 1996. The manual was reviewed in its entirety, references updated and programs revised as needed. The four sections were revised as follows:

Chemical Stressors Section

1. AMSP programs #113 and #114 were combined into one program, #113 Asbestos Current Worker. A grid was added for x-ray periodicity.

2. Cadmium program was updated to meet the OSHA standard.

3. Programs for tungsten, cemented tungsten carbide and vanadium were deleted.

Mixed Exposures Section

1. Several programs were moved from Chemical Stressors to Mixed Exposures Section. Anesthetic Gases, Machine Oil Mists, Animal Associated Diseases, Manmade Mineral Fibers, Antineoplastic Drugs, Organophosphate/ Carbamate Herbicides Compounds.

Certification Examinations (RENAMED Specialty Examinations)

1. DOT Vehicle Operators Civilian (702) periodicity revised to every two years.

2. Explosive Handlers and Explosives Vehicle Operators (Civilian) separated from DOT examination and periodicity revised based on age.

3. Military DOT, Explosive Handler/Vehicle Operators (interim exam) is a new program providing a format for documentation of periodic military physical examinations. Military members are exempt from DOT requirements and meet the periodic exam requirement with the regular military physical exam.

4. Firefighter (722) examination periodicity was revised based on age.

5. Firefighter annual screening (707) is a new program added for those years when the full examination is not performed. Based on this screen, a periodic examination may be performed.

6. Health Care Workers program (719) is now a baseline exam only with the continued requirement for annual TB test.

7. Motor Vehicle Operator (Other than DOT) (712) periodicity was changed to age based.

8. Police/Guard Security (714) periodicity changed to age based.

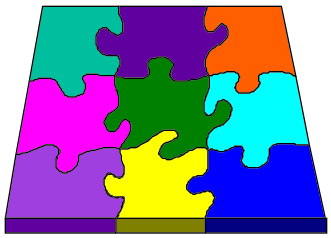
Change 1 to the Medical Matrix was mailed in November, revising programs 115 and 116, Asbestos Past Worker.

The PC Matrix is a computer tool to generate SF600 forms for documentation of examinations contained in the Medical Matrix. This has also been updated and is available for use.

Continued next column

Points of contact for questions about either the Medical Matrix or PC Matrix can be directed to Martha Murray, COHN-S or Sally Salang, COHN-S at (757) 444-7671 or DSN: 564-7671.

Martha Murray, RN, COHN-S
OCC HEALTH NURSE CONSULTANT
NAVOSH DEPARTMENT, NEPMU-2



Last to Go

Man is gifted with a number of abilities. Some of them are known as senses. We humans are able to see, hear, smell, touch, and taste. These are the well-known five senses. Sometimes we speak of a sixth sense, that of perception or intuition. When we have lost one ability, most of us will overdevelop one or more to compensate for the loss.

Considering how dependent you are upon all your senses, what sense, if you had to, would you be willing to do without? Let's take a hypothetical situation. For some reason, you are required to part with one of your five senses. The choice is yours. Most people would probably vote to relinquish the sense of touch first. While very difficult to live without, loss of sense of touch might not pose the problems encountered by the loss of some of the others.

Probably the next would be smell. Some folks may consider this one as the first to go. Others may rank taste as less important than the sense of smell. Some would want to retain a sense of taste over smell, even though some experts have told us that the taste buds don't work accurately when the sense of smell is absent.

The last two senses to be surrendered in anyone's book would most likely be the senses of hearing and sight. While no one would like to be deaf, most would rather be deaf than blind. It is almost universally accepted that sight is the most precious ability we have, and would be the very last to go on any imagined list.

But consider this: Why is it that workers take so many chances with their most precious sense? Every day people are blinded or suffer serious eye injuries because of failure to wear approved protective eyewear. It is almost as if the sense of sight is considered the least valued on this very short list of five.....instead of the last to go.

Mr. L. E. GILLETTE,
NAVOSH DEPARTMENT, NEPMU-2

Protecting your Hearing

Hearing is a specialized sense dependent on the ear, the auditory nerve, and the auditory cortex of the cerebrum. The early detection and prevention of ear diseases are important both in children and in adults. Before you learn to speak, you must first be able to hear, then interpret what you heard, and then you must be able to provide feedback in the form of speech. Impairment of hearing may cause changes in a person's personality and attitude, in their ability to communicate, in the awareness of their surroundings, and even their ability to protect themselves. Many individuals are not aware that their hearing is impaired until they have a hearing test. Some people with a hearing loss often refuse to seek medical attention because they are afraid that it is a sign of advancing age. There are two major types of deafness: conduction deafness and nerve deafness.

Conduction deafness can be caused by a congenital defect, such as when a pregnant woman contracts German measles during the first trimester of

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pregnancy and the fetus is exposed. For this reason every female of child bearing age should receive rubella immunizations. Conduction deafness can also be due to infections that have caused the ossicles to fuse, restricting the ability to magnify sound waves. Because respiratory infection can spread to the ear by way of Eustachian tubes, every cold and respiratory infection should be taken seriously. Nerve deafness most often occurs when the cilia on the sensory receptors within the cochlea have worn away. When the hair cells are constantly under strain, they will eventually die and be unable to perform their function, resulting in hearing loss. Since this can happen with normal aging, old persons are more likely than younger persons to have trouble hearing. Nerve deafness also occurs when people are exposed to noises above 84 decibels on a regular basis. Hearing aids will not help nerve deafness; it is wise to avoid subjecting the ears to any type of continuous loud noise. Costly cochlear implants which stimulate the auditory nerve directly are available, but those patients who have used them report that their speech is like that of a robot.

Studies also suggest that noise

Continued next column

induced and age associated hearing loss can be prevented if ears are protected from loud noise starting at an early age. Hearing protection is needed if sound levels exceed 84 decibels. Exposure to noise from aircraft, boom box stereos, guns, music at rock concerts, some industrial tools and trucks, especially if continuous, could lead to the damage of the organ of corti and the hair cells.

The first symptoms of hearing loss are a feeling of fullness in the ears, muffling in the ears and ringing of the ears. If you have these symptoms you must reduce your noise exposure to prevent further damage and immediately seek medical help. Hearing protection devices that are especially designed to reduce noise are available at all drug stores or at sporting good stores. These devices are not the same as those worn for swimming, and should not be used interchangeably.

Finally, be aware that some medicines are ototoxic. Certain anti-cancer drugs and antibiotics can cause hearing loss. Anyone taking such medication needs to be careful to further protect the ears from any loud noise.

HMC(FMF) C.A. YAGO
Industrial Hygiene Dept., NEPMU-6

Environmental Health Survey: Who, What, When, How, Why?

For those of you on board ships, there may come a day when your tickler tells you that you are due to have an environmental health survey. Huh? You say while scratching vigorously at your gourd. So you research NAVMED P-5010, no luck; COMNAVSURFLANTINST 6000.1G, there we go!

This instruction requires all ships in the Atlantic Fleet to have an environmental health survey every eighteen

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months, or before a major deployment. Progress is being made. You now know who (your ship), and when (soon), and why (cuz COMNAVSURFLANT says so), but what is it and how do we obtain such a service?

An environmental health survey (henceforth to be referred to as an EHS) consists of a team of outsiders taking a look at the way your ship handles various programs. I know, another @#*&#@@ inspection. But it really is more along the lines of an assist or training visit. The Environmental Health Department here at NEPMU-2 (believe it or not!) is here to help you. For starters, we report to the Commanding Officer of the ship and only to the CO. We do not report to Type Com-

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mander, Squadron, Group, the Pentagon or the Veteran's Association.

Under normal circumstances, it works best like this:

* Place a phone call to negotiate for a week (Mon-Fri) for the EHS and we will tentatively schedule your survey.

* Confirm request with a message, or with a formal letter, CO to OIC NEPMU-2.

* We will then confirm your date in kind (message for message, or letter for letter).

* Should your operating schedule change, please contact us at the earliest possible moment to reschedule or make other arrangements as painlessly as possible.

We usually will schedule an inbrief for Monday morning with the survey team members, the CO, XO, MDR, the Water King, someone involved with the MSD system, and the Food Service Officer.

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Prospective Authors:

Have any suggestions? Interested in contributing?
Send your articles/comments in now! See page 2 for more information.

Lead-Free Paint

In removing a surface coating that may contain lead, you must know more than whether the paint is lead free. Before you can decide what type of controls are required, it is necessary to know the percentage of lead that is in the dried film by chemical analysis. There are two definitions of lead free paint used by the Federal Government. The Housing and Urban Development Agency (HUD) defines lead-free paint as paint that contains less than 1.0 milligram per square centimeter mg/cm^2 by X-Ray analysis or 0.5 percent by weight of the dried film by chemical analysis. The Consumer Protection Agency defines lead free paint as paint that contains no more that 0.06 percent lead by weight in the dried paint film. OSHA does not stipulate a specific percentage of surface lead not to exceed. OSHA examines the operation for potential exposure to lead as a surface contaminant and evaluates protective measure to minimize exposure. Although OSHA does not have a numerical trigger for lead as a surface contaminant, airborne concentrations are strictly regulated. Currently the action level is 0.030 milligrams per cubic meter. The amount of lead in the breathing zone of an individual

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depends upon the percentage of lead in the paint along with the amount of dust generated in removing the paint. Theoretically, when HUD lead free paint having 0.5 percent lead is being removed only 6 mg/m^3 of total dust would have to be generated to turn the operation into one in which OSHA lead controls would have to be implemented. If the Consumer Protection Agency lead-free paint guidelines were applied and paint was being removed with 0.06 percent lead, then 50 mg/m3 of total dust could be generated theoretically before OSHA controls would be required.

HUD lead-free paint can have up to 0.5 percent lead and removing the paint can expose the remover to a health risk at a relatively low dust level. X-Ray analysis test equipment and chemical spot test equipment are designed to measure lead at the higher HUD level. Since this level will insure safety at the level of dust that is typically generated in an occupied house, a more sensitive test is needed for dust levels that are generated when paint is removed. The test required for paint removal is the more sensitive chemical analysis.

G. A. Lindsay, CIH
CIHL Director, NEPMU-2

Prev Med Doc in Space !!! (again)

CAPT Jerry Linenger, MC, USN (FS) will not be reading this edition of the Fleet Public Health until May (unless he can download it from the NEHC Home Page - http://ehc50.med.navy.mil). He will be in space on board the Russian space station MIR. CAPT Linenger flew on board Space Shuttle mission STS-81 in January 1997 that docked with the MIR in January to bring astronaut John Blaha back to earth.

CAPT Linenger flew in space on board the Shuttle in 1994 and spent over two years preparing for this mission, including time at the Russian Star City cosmonaut training complex. The Shuttle-MIR docking missions are considered practice for the international space station, which is slated to begin construction in November 1997. The study of long term effects of being in space is another goal of this joint US-Russian mission. Linenger is well qualified to be studied, being an avid marathon runner and triathlete.

This is the latest accomplishment for our high flying navy doctor who is a Naval Academy graduate, completed medical school, flight surgery, and preventive medicine residency training while on active duty in the Navy and has served as a Preventive Medicine Officer at the Naval Health Research Center before being selected for astronaut training.

His wife Kathryn is due to deliver their second child in June shortly after his scheduled return from space, in a May 97 space shuttle mission. Do you think they will let him off the shuttle first after 132 days in space ?

CAPT Richard Thomas, MC, USN
OIC, NEPMU-2

Environmental Health Survey, ... Continued from page 6

The outbrief will be scheduled at the convenience of the CO. This consists of a review of the checklists used during the survey, focusing on the major findings.

The finished report will be sent out within ten working days, and will have the itemized findings paired with a course for recommended corrective action also documenting the instruction or publication cited.

We come on board to take a look at the way the ship's personnel handle food service sanitation, potable water, the marine sanitation device, habitability, barber shop, water laboratory procedures, programs for disease prevention and pest control programs. In the course of the survey, we interface with a variety of the ship's complement.

During our visit we will spend time in Medical, for the Programs for Disease Control, Potable Water, Water Laboratory, MSD, Food Sanitation, Habitability, Barber Shop and Pest Control program.

The main point of the survey is to provide some on site training to the crew, and to attempt to fine tune the ship's programs. We are NOT ogres! We're on board to help. So you really do not need to set "stratospheric" on the stress level.

Hopefully, this has shed some illumination on the EHS process for you. We hope to be hearing from you soon.

HM1 D. A. Evans, USN, NEPMU-2

Download *Fleet Public Health*

Fleet Public Health is available from the NEHC homepage. For information on downloading an electronic version, check the NEHC site at:

http://ehc40.med.navy.mil

BALTIC CHALLENGE '97 TALLIN/ VALDISKI, ESTONIA

U. S. Navy Environmental and Preventive Medicine Unit No. 7 performed an environmental health assessment of the "Partnership for Peace" exercise "Baltic Challenge '97" in Tallin/Paldiski, Estonia. This high level initiative is designed to improve cooperation between the Baltic nations and the United States in peacekeeping training and exercises. The assessment covered three areas: Paldiski garrison, Klooga range and the Amari airfield area.

I left for Tallin, Estonia on 2 November 1996 to perform the pre-site environmental health assessment for the upcoming exercise. The camp site survey was scheduled on the second day of the Initial Planning Conference (IPC). The first day covered country briefs and participants' introductions. The total number of personnel involved was also a center topic along with billeting and of course additional funding. CAPT Garnto, Medical Planner from CINCUSNAVEUR, CDR Bowman, Medical Planner from 2d FSSG and myself composed the USN medical syndicate along with three Estonian physicians. Together we would determine the medical requirements for the exercise.

The food service sanitation survey consisted of inspection of the Paldiski garrison mess hall, although a new facility is scheduled to be constructed for use during the exercise. In general the facility was clean and in good repair. The food service workers demonstrated signs of having had previous training equivalent to U.S. personnel. They were all wearing appropriate garments and using good hygiene techniques (i.e., hand washing, no smoking, etc.). The kitchen setup consisted of stainless steel equipment made in Finland, including an automatic conveyer type dishwasher. They also had the three sink style setup for manual dish washing for pots and pans. An inspection of the dry food storage area revealed a very organized system for one-day use of items on hand due to limited storage space within the facility. Additional items would be brought in daily from warehouse reefers located behind the mess hall. There was no evidence of pest harborage or infestations in the dry storage areas. The officer in charge presented several chemicals as proof of proper disinfection and sanitization. Even though there appears to be a food service sanitation program in place, we need to ensure that this same level of sanitation is maintained throughout this exercise. In addition, the new facility will be much larger and may require more frequent inspections due to the volume of personnel serviced (approx. 1500 daily). A food service sanitation refresher course will ensure that all food service workers are at the same level. Pest control monitoring is essential as the temperature changes increase the risks of potential nuisances.

Chemical and bacteriological analysis of the water at the Paliski garrison area revealed that the water quality was apparently safe. Even with low levels of chlorine there is some skepticism because water samples taken from the Amari airfield, some ten minutes away, were bacteriologically unsafe and showed no signs of chlorination. The sanitary survey of water/wastewater systems also revealed there were no engineering plans available since the area was an old Soviet military installation. An approved source of drinking water must be obtained since the area's water system is questionable. A local bottler has yet to be identified but several well-known brands of water were purchased in country. The other option would be to have water buffaloes positioned at various sites and replenished daily via the Maritime Prepositioning Ships (MPS).

In visiting the two major hospitals in this area and the battalion aid station in the Paldiski Training Area, we determined low incidence of disease via insect vectors (i.e., ticks, mosquitoes, flies, etc.). This is largely due to education of the local population concerning the vectors and the weather at the time the exercise is scheduled. Tickborne encephalitis was a major concern in Latvia and presumed to be the same here. However, the local physicians assured us it had not been a problem in the past and they don't anticipate any for this exercise. It may still be relatively cool and the ticks will not be as active. Poisonous snakes were also a concern as they are endemic to this area. No other prevalent disease risks were identified. Standard predeployment brief concerning immunizations, communicable diseases and sexually transmitted diseases should be used. All personnel should have chemically treated BDU's and take necessary precautions in high grassy areas. Medical staff should maintain an adequate supply of deet and permethrin for skin and uniform application. IG or hepatitis A vaccines should be included in the immunizations.

There were several industrial hygiene concerns addressed during the conference. The first one of the lessons learned from "Baltic Challenge '96," was to rule out asbestos in any potential Seabee project. According to the construction syndicate the project area identified had no apparent asbestos risk except the roofing material which would not be disturbed during the renovation. However, to positively ID asbestos requires sample analysis of interior surfaces by certified personnel. The proposed renovation project needs to be properly evaluated by an industrial hygienist to rule out asbestos and any other potential hazards. Water samples were collected and sent to Germany for analysis.

The Paldiski training area in general provides optimal training opportunities for all participants. However, the need for preventive medicine support is essential to reduce the risk of potentially hazardous conditions or occurrences. At this point the quality of water is the main issue which will require additional investigation and analysis, prior to the exercise.

HMC Tony Bable, USN
Epidemiology Department, NEPMU-7

The Swimming Pool

In pursuit of the ultimate recreational activity, health and safety is often taken for granted. The swimming pool is one of the most inexpensive forms of entertainment for the family. The base pool has a double life. In the morning it is used as a training aid to enhance survivability of sailors in the water. In the afternoon its recreational value is realized by many people, all with one common goal - fun. For this reason, employees must be ever vigilant to identify safety violations and have proper training in order to maintain the safest recreational environment. In addition, sanitation must always be at the forefront, with frequent and thorough preventive medicine inspections to ensure a healthy swim.

Recreational pools are usually inspected monthly for safety hazards, chlorine residual, bacteriological analysis, and pH testing. Swimming pool inspection standards and requirements are thoroughly discussed in NAVMED P-5010, chapter 4, articles 4-5 through 4-15. Water analysis standards are discussed in the latest edition of Standard Methods for Examination of Water and Waste Water part 9213.

Historically, pool water is examined for total coliform bacteria which is an indicator of fecal contamination. The presence of other organisms is often overlooked and may present a more serious threat to public health. Pathogenic organisms such as *Mycobacterium, Candida albicans,* and some species of *Naegleria and Acanthamoeba* may pose a significant threat to recreational waters. Some have an ability to form spores and cysts, which afford them greater resistance to common disinfectants. Routine analysis for these pathogens is recommended in investigations associated with a suspected water-related illness. Currently, there are no cost-effective diagnostic tools available to detect the former organisms. Monthly bacteriological analysis for coliform bacteria is still required.

Monitoring pool water quality involves measuring the chemical and physical characteristics of water, which affect the well being of both swimmers and the microorganisms they shed. Proper chemical surveillance includes having a basic understanding of the two most important indicators of the efficacy of chemical disinfectants: water chemistry and optical clarity. One must also ensure that the chemical balance of the water is properly maintained. Physical surveillance involves verifying items designed for patron and employee safety are in place and properly maintained. Automatic chlorine detection devices should be used. Suitable warning signs should be available for posting, such as IMMEDIATELY EVACUATE. Qualified lifeguards should be employed, who have received thorough indoctrination on procedures to follow in the event of a chlorine gas leak.

Continued next column

"Monitoring pool water quality involves measuring the chemical and physical characteristics of water, which affect the well being of both swimmers and the microorganisms they shed."

Patron safety items include, but are not limited to, clear cut rules and regulations which must be posted in plain view. Life saving equipment should be stored at each lifeguard station. Your surveillance should also include checking pool logs to determine the number of patrons per hour per day, and tracking the concentration of free available chlorine (FAC) and pH levels to ensure optimal chemical balance.

Swimming pools can provide countless hours of enjoyment but require an enormous investment of time for maintenance. When recreational use increases, maintenance must also increase proportionally. It is a fact that it takes a combined effort between both Preventive Medicine and Morale Welfare and Recreation personnel to ensure a safe and healthy recreational en vironment.

HMC D. HI LLMAN
dwhillma@hq.pacom.mil
Environmental Health Dept., NEPMU-6

Lessons Learned From Shipboard Use of an X-RAY Fluorescence Lead-based Paint Analyzer

As per OPNAVINST 5100.19C, all ships should determine the presence or absence of lead-based paint prior to removing it by mechanical means. As the personnel responsible for performing industrial hygiene surveys for the Atlantic Fleet, we wanted to be able to provide the ships with a quick, on site, non-invasive analysis of painted surfaces to determine the presence or absence of lead-based paint. We purchased an X-Ray Fluorescence Lead-Based Paint Analyzer (commonly referred to in the field as an XRF) with the intention of performing this type of service. Unfortunately, we did not do our homework and after receipt of the instrument we found that there was no limit established by the Occupational Safety and Health Administration (OSHA) for determining the absence of lead-based paint with these instruments. We changed our intent to include this limitation such that the ships would get a result in terms of high, low, or borderline lead levels in the paint. With this limitation, we would have to take a bulk sample of the paint for analysis by the Consolidated Industrial Hygiene Laboratory (CIHL) to determine the absence of lead-based paint.

To summarize the advantages and disadvantages we have experienced with the use of this instrument for our intended purpose, consider the following:

ADVANTAGES:

1) Portable, allows on site analysis.
2) Real time results, readout in a matter of seconds or minutes.
3) Non-invasive measurements.

DISADVANTAGES:

1) Results are in mg/cm^2 instead of

Continued on page 16

NEPMU5 DARS, 1995

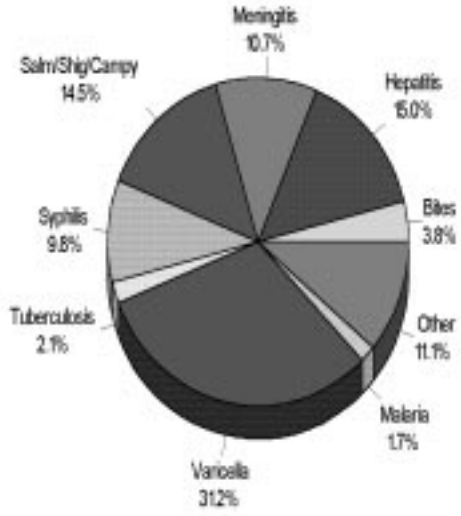
In the last issue of Fleet Public Health (January, '97), DARS data for 1995 were summarized in an article, *Review of disease cases: 1995*. The following graphics further describe those data, and should have been included in the January issue. For a discussion of the data, you are referred to that article.

1995 NEPMU 5 DARs By Major Disease Category

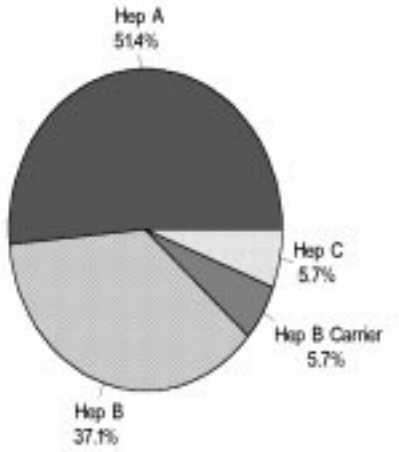
DIAGNOSIS	Active Duty	Dep/Ret	Total
Bites	9	1	10
Hepatitis	35	24	59
Malaria	4	1	5
Meningitis	25	47	72
Salm/Shig/Campy	34	36	70
Syphilis	24	12	36
Tuberculosis	5	21	26
Varicella	73	0	73
Other	26	32	58
TOTAL	235	174	409

Active Duty Reported Categories

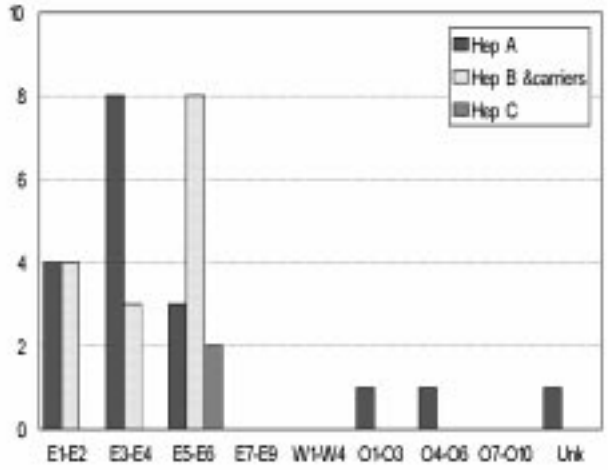
CY 1995



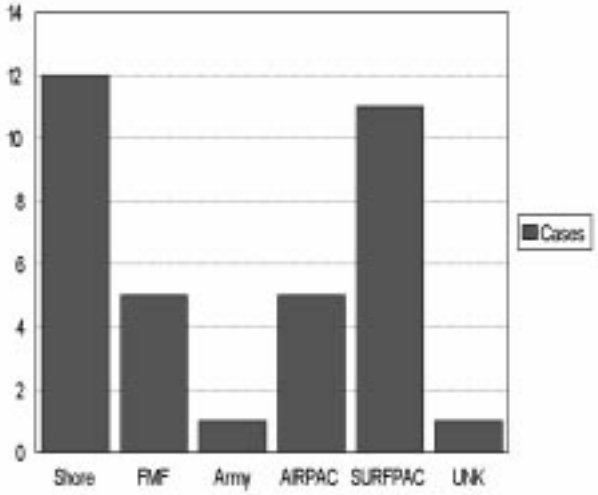
Hepatitis Cases



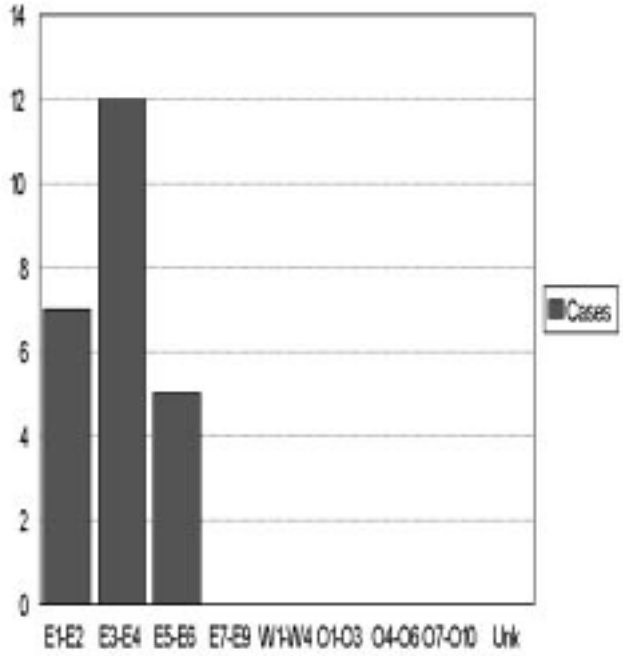
Hepatitis Types By Paygrade



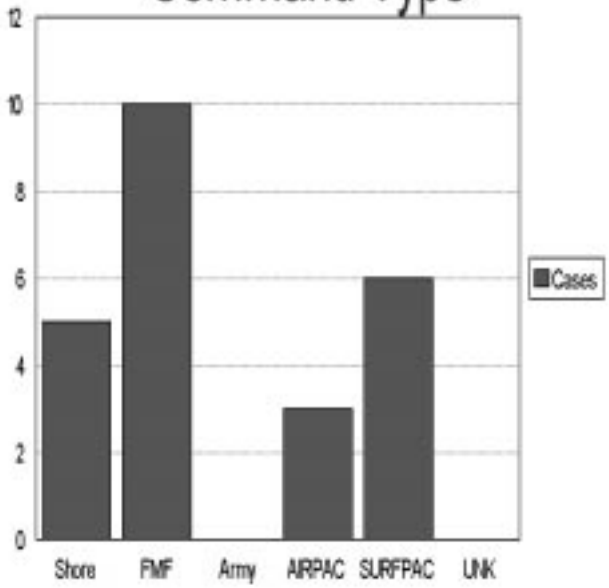
Total Hepatitis By Command



Total Syphilis By Paygrade



Syphilis Cases By Command Type



Navy Disease Reporting System (NDRS) Program

Disease surveillance is one of the most important responsibilities of preventive medicine. Good, timely, reliable data are essential for evaluating disease occurrence and developing programs and policies to prevent disease.

To improve our current disease reporting system, the Navy Disease Reporting System (NDRS) program is being implemented. This program was adapted from the surveillance program developed by COL Robert Williams and CPT Sam Hall of the United States Air Force. We are indebted to them and the Air Force for providing us with an effective and flexible tool.

We ask our customers who report diseases to assist us in quickly transitioning to this new program. The program and upgrades will be available on the NEHC Homepage for downloading or disks will be mailed upon request.

The following is provided as an overview of the new program:

Purpose: The main purpose of the NDRS is to improve the compliance, timeliness, and reliability of disease reporting. In addition, functions have been included to assist the local command with state reporting, prevention programs, and contact tracing.

BUMED INSTRUCTION 6220.12, Subj: Disease Alert Reports (DAR): NDRS does not replace the current DAR instruction. However, a new instruction to include the NDRS will be written in the future. Until then, the report format in the instruction or in the automated system are acceptable. Only the diagnoses included in the list of Reportable Communicable Diseases in BUMED INSTRUCTION 6220.12 require reports. Reports are still sent to the cognizant NEPMU and other commands as prescribed. As indicated by instruction, certain diagnoses must be reported within 24 hours; others are to be submitted at least monthly.

Submission of DAR: Routine reports should be submitted at the end of each month. Urgent reports should be reported within 24 hours. Diseases that require immediate reports may initially be submitted by phone. Diseases or outbreaks not in the reportable list but of significant mission and/or public health importance should also be reported.

Transmission of DAR: The preferred method of DAR transmission is email. DAR transmission by fax, message, or mail is still acceptable.

Computer Requirements: The following minimum equipment is needed to efficiently run NDRS:

Computer: 486 PC processor
8 megabytes RAM
Windows 3.1

Updates: NDRS will continue to evolve as its capabilities are refined and expanded. The NEHC Preventive Medicine (PM) Directorate is responsible for the development of NDRS. Your ideas and comments are extremely important in maximizing the use and value of this product. Please forward your suggestions to the NEHC PM Directorate (listed below). Updates will be made available on the NEHC PM homepage or on 3 1/2 disks.

Continued next column

Technical Support: Questions, recommendations, and comments about NDRS may be directed to any of the following:

Navy Environmental Health Center (NEHC) Preventive Medicine Directorate
Phone: DSN 864-5500; Comm (757) 363-
Fax: DSN 564-1345; Comm (757) 444-1345
E-mail: prevmed@med.navy.mil
Homepage address: http://ehc40.med.navy.mil

Or the Epidemiology Department of any of the four Navy Environmental and Preventive Medicine Units. (See page 2 for phone and FAX numbers, and e-mail addresses.)

CDR S. G. Hooker, MC, USN
Epidemiology Department
Navy Environmental Health Center

Transitioning to the MEDIC

The Navy is transitioning to the use of medical intelligence products disseminated by the Armed Forces Medical Intelligence Center (AFMIC). Their primary product is the Medical Environmental Disease Intelligence and Countermeasures (MEDIC) CD ROM, which includes the Armed Forces Preventive Medicine Countermeasures (AFPMC). The NEPMU's and the Marine Expeditionary Forces (MEFs) have the MEDIC CD ROM which gives country by country preventive medicine recommendations. Also, the latest AFPMCs are available on 3 1/2 inch disks in ASCII and WP 6.0 format and are available through the NEPMUs. For most purposes, they will replace the Navy's Disease Risk Assessment Profiles (DISRAPS).

The MEDIC also contains the Manual of Naval Preventive Medicine (NAVMED P- 5010), parts of the Control of Communicable Diseases Manual (NAVMED P-5038), the Army Vet Corps Directory of Sanitarily Approved Food Establishments for Armed Forces Procurement, and other valuable resources. The Malaria Blue Book will be added in the future. A reference file called the "Guide" in the AFPMC gives additional information about potential threats and countermeasures to be taken for prevention and control.

Other AFMIC products include the monthly Disease Occurrence Worldwide (DOWW), the AFMIC Wire, Health Services Assessments (HSAs), and Medical Capabilities Studies (MEDCAPS). AFMIC has an unclassified bulletin board and is planning for a home page on the World Wide Web later this year. Naval hospitals and branch medical clinics desiring a copy of the MEDIC should contact their cognizant NEPMU. Operational forces should follow the directions listed below in order to receive AFMIC products:

The MEDIC and other hardcopy products produced by

Continued on page 13

Transitioning to the MEDIC **Continued from page 12**

AFMIC are disseminated by the Defense Intelligence Agency (DIA) through the Defense Intelligence Dissemination System (DIDS) based on requirements registered by the organization in a Statement of Intelligence Interest (SII). The majority of the time the SII is maintained by the intelligence office or security office. If your organization is neither a hospital nor clinic and is not receiving the MEDIC, please check with your intelligence office to establish or update your SII. To update your SII, your intelligence office should modify the SII to reflect the addition of Intelligence Function codes (IFCS 1812, 1813, and 1816 and CD as the media requested. If your organization does not have an SII registered with DIA, follow the procedures as outlined in DIA Regulation NO. 59-1, dated 12 June 1995, "DoD Intelligence Dissemination Program".

CDR S. G. Hooker, MC, USN
Epidemiology Department
Navy Environmental Health Center

Radiofrequency Radiation: an Industrial Hygiene Primer

Background:

Radiofrequency radiation (RFR) is an often heard of and talked about scientific phenomenon, especially in the telecommunications field (Radars, radios, television, and transceivers), but it is also often talked about in a bad light when it comes to human exposure and health effects. Since RFR is a wave form of energy and is often all around us as an unseen, intangible force, many people express concern when they suspect that this form of energy is affecting them or their children. Hopefully, this article will give the reader and practicing Industrial Hygienist (IH) a good fundamental understanding and methodology of evaluating RFR in the workplace and community.

Physics and Physiology:

Physics is probably almost everyone's least favorite subject but there's no way around it if you want a basic grasp of RFR. First and foremost, RFR is a wave form of energy and complies to the basic laws of physics when predicting wavelength. Secondly, it is a form of non-ionizing radiation. This means the RFR wave does not carry enough energy to knock an electron out of an atom's orbit and create an ion particle. Don't confuse RFR waves with ionizing radiation (alpha, beta, X, and gamma rays). Ionizing radiation is of much shorter wavelengths (in the order of 10^3 Angstroms or less than 1/10,000,000 of a meter!) and carries with it much more energy. These short, high-powered waves are short enough to interact with individual cells by creating negatively or positively charged ions which interact with other molecules, especially one important one called DNA, which is why this radiation is known to cause certain cancers. Figure 1, adapted from the American Industrial Hygiene Association (AIHA) nonionizing radiation guide, shows the relationship between wavelength and frequency for ionizing and nonionizing radiation.

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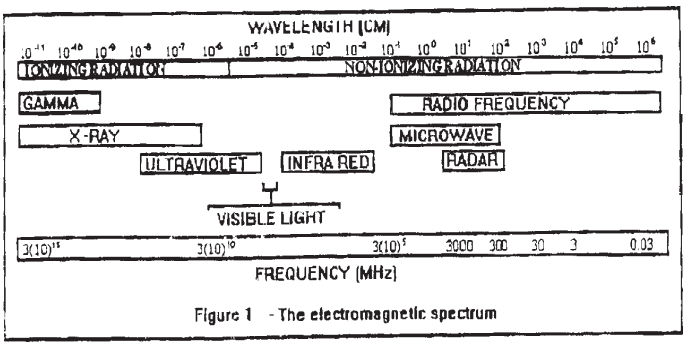
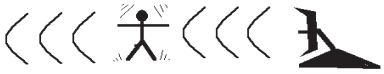


Figure 1 - The electromagnetic spectrum

Now for the possibly boring, but essential, math that goes with predicting wavelengths. With a basic formula and a little manipulation, anyone can determine the length of an RF wave if the frequency is known. This formula is broken down into C = wavelength (l) times frequency (f) where C equals the speed of the wave, wavelength is in centimeters and frequency is in hertz. Hertz is simply how many times the wave repeats per second. (example - electricity in the U.S. cycles through our wires 60 times per second therefore 60 hertz). Since an RF wave is a form of electromagnetic energy, it's speed is the speed of light and is a constant at 3×10^{10} centimeters per second. There's no way of escaping exponential math and the metric system in this science, so the sooner you know it, the better! This is the first step for an IH in determining the Maximum Permissible Exposure (MPE) for various wavelengths which are variable depending on the wavelength.

Example:

An IH is asked to evaluate a naval communications center transmitter which is operating at 200 megahertz (mega means 1×10^6 and is abbreviated as MHz). The generating source is a Klystron (a device which converts electrical energy into the desired wavelength) inside the comm center where workers make alignment adjustments to the Klystron once a quarter for 10 to 20 minutes. What is the wavelength and the PEL for this frequency?



An example of a 4.9 foot person in the path of a 200 MHz wave and resonating RF energy

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Answer: 1) C = wavelength (l) x frequency (f) 2) Isolate wavelength as the term you want to find so (l) = C/(f) 3) (l) = 3 x 10^{10}/(200 x 10^{6}) = 150 centimeters = 1.5 meters = 4.9 feet

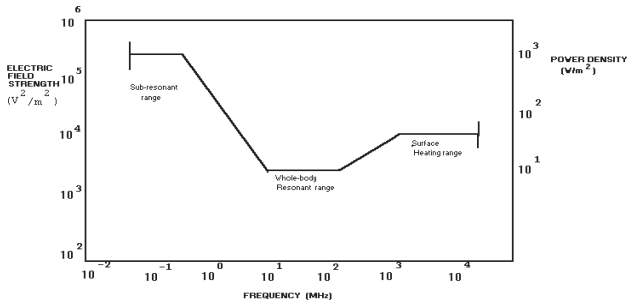

Figure 2 - Generic human exposure guideline

The MPE is based on the physiologic response of our bodies tissues being heated by the energy deposited by the RF wave. The standards were developed and verified through several Russian and American studies, particularly the work of Mattson and Oliva, involving exposure of Rhesus monkeys to various wavelengths at various power levels. When the monkeys' bodies and tissues could not dissipate the deposited energy fast enough, the first markedly noticeable "irritable behaviors" were identified and at what power levels. This power level was almost always typically 100 milliwatts (mW) per centimeter squared (cm^2) when dealing with the lower and upper range frequencies. This is known as a power density since this is how much energy (mW) is deposited on the surface area of our skin (cm^2). As is often the case with most experimentally extrapolated animal data that is applied to human populations, a safety factor of 10 was applied. This is why the current standards list the maximum human exposure to RFR as 10 mW/cm^2 for these frequencies and is generically represented in Figure 2 which was also provided by the AIHA nonionizing radiation series guide.

The MPE for 200 MHz can be found in Table 3-1-1 of reference (a) which in turn was borrowed from the reference (b) ANSI standard. This is the private industry standard for controlling RF exposures. The current OPNAV 5100.23D and 5100.19C instructions will be updated soon to adopt and incorporate the more current and accurate references (a) and (b). References (a) and (b) have relaxed the MPEs in the low and high ends of the frequency range. Based on what was just discussed, this is due to the wavelengths being extremely short or very long and not affecting people as much as the 100 - 300 MHz range where the people's heights can cause them to act as antennas and human resonance can occur. For this range of wavelengths, the MPE is at its strictest and lowest at 1.0 mW/cm^2.

Remember, this is whole-body exposure. The same studies in monkeys also showed that certain body organs and tissues with a much higher liquid content were much more susceptible. This is due to the fact that the RFR energy and wave

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excites and heats water molecules very easily. This is why when someone puts a cup of water in a microwave oven for 60 seconds on high power that it will come to a boil. The microwave oven (typically 915 MHz for commercial and 2450 MHz for home microwaves) is bending, twisting, and rotating water molecules causing friction and heat to be generated, ergo boiling! For these reasons, the human eyes and testes, with their high water and specialized fluid contents, are much more susceptible to deposited RFR energy.

A key point that must be noted is that the RF wave has energy associated with it within only a short distance from the generating source. When following the inverse square law as applied to wave forms, the more distant one gets from the source, the energy associated with it decreases according to the inverse squares rule. So by the time TV and radio waves leave their generation source and reach an individual, there is virtually no power associated with it.

It is for these reasons that the highly publicized Swedish epidemiologic study by Ahlbom which associates RFR exposure from power lines with causing cancer is generally disputed. The study did show weak epidemiologic association between RFR and cancers, but no mechanism on how RFR causes cancer could be found. Also, the study only reported which variables it was correlating had a positive association with causing cancer. It did not report out that there were several factors that actually showed a protective factor to RFR! The other side of the argument against this study is that with the increased use of electromagnetic energy since the turn of this century, one would expect a proportional increase in the number of cancers. Cancer data shows that the overall cancer rates for the U.S. population has remained relatively constant over that same time period.

Measurements:

This is where the IH can now ply his or her trade in the field. Most monitoring equipment (for the Navy and most of private industry it's NARDA or HOLIDAY equipment) measures out RFR as a power density (mW/cm^2). The biggest word of caution to any IH who wishes to take RFR measurements — know the equipment you are operating and the standards governing the survey. NARDA has a probe coloring system so the user must match the color probe to the color scale on the instrument. All RF equipment has its ins and outs which must be learned. References (a) and (b) give good guidance on how to perform a basic free-field whole body exposure measurement using these instruments. The IH should be thoroughly familiar with these references and their equipment prior to doing a survey.

The second thing to know is when not to measure. Many times, the steps have been taken by other Navy experts such as: 1) Naval Electronic Systems Engineering Command (NAVELEXCEN) in Charleston, SC DSN: 563-4000 or Comm:(803) 745-4600; 2) COMNAVSEASYSCOM in Washington, D.C. DSN: 332-3825 or Comm: (703) 602-3825; and 3) NAVENVIRHLTHCEN in Norfolk, VA at DSN: 864-5500 or Comm: (757) 363-5500.

NAVELEXCEN and COMNAVSEASYSCOM have

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Radiofrequency Radiation ... Continued from page 17

developed electromagnetic radiation hazard (RADHAZ) zones and charts for all radar, communications, and weapons systems which the Navy operates. They also have the equipment and expertise to determine individual worker exposures. A good IH's role is to competently determine if an individual worker exposure to RFR is occurring, accurately quantify it, and then relay this information through the appropriate channels to the above mentioned experts. These personnel can then review the electronics and engineering controls (shielding, completed circuits and conductivity of the RFR wave to control RFR "leaks", establish stay times, etc.). But these Commands need the assistance of competent IH personnel to make a timely assessment of when such equipment has "gone out of specs" so they can correct it.

THE FUTURE:

Recent happenings in the U.S. telecommunications world have opened up many RF bandwidths to private companies when they were previously reserved for military use. Besides communications, nonionizing radiation is being tested in the agriculture industry to kill insects in dry-grain storage instead of using pesticides. It is also currently used in thermal heaters and sealers. The automobile industry is planning to equip cars with RF emitters which will gauge the distance between cars to help prevent accidents. The future uses of RFR are almost limitless. But in science's rush to implement their creations for the good of the public, the public is sometimes exposed to a stressor they may not fully understand. A good case in point is the first microwaves when they came out. Remember how "leaky" those things could be? Now with improved, engineered safety features, current microwaves are intrinsically safe until damaged. And those things never get damaged and still used anyway, Right?!? By applying sound, fundamental physics with basic physiology and good instrumentation, a prepared IH will always be in demand. Because of these recent, fast advances and implementations of new RFR products, the need for IH's to perform routine, periodic monitoring of possible RFR hazards in the workplace to prevent accidental mishaps and exposures is a must.

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RFR is just one aspect of the science of electromagnetism which is often encountered in the workplace. The future technologies of the U.S. and the Navy are highly dependant on this science. Along with this science come whole other areas of potential hazards that IH's must have a basic understanding and awareness to identify and control in the workplace. These include, but are not limited to, ionizing radiation, lasers, static magnetic fields, and induced and contact currents, to name just a few. I hope this article interested any IH or IHO out there who comes across this issue. If there are comments about the article, please feel free to contact me on the internet at: e-mail: rjmorin100@aol.com

Ron Morin, REHS, CIH
Regional BUMED IH Manager
NEPMU-2

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Preventing Rodent Infestations

Twice a year, all ships require a derat certificate to be issued to them. What exactly is a derat, and why is it so important? A derat is a rodent inspection which is conducted by a certified Unites States Public Health Service (USPHS) quarantine rodent inspector, who issues a Deratting or Deratting Exemption Certificate to the requesting ship, when no evidence of rodent infestation is present. This form is published by the Division of Quarantine, Center for Prevention Services, Centers for Disease Control. It is required to be undersigned by a Medical Department Officer who is designated as a United States Public Health Service Officer, with the USPHS seal applied over the signature. The form must be kept up to date on board all potentially deployable ships and is good for six months. One month extensions are also available via message. What kinds of signs of rodent infestation are the inspectors looking for?

The first thing that a USPHS quarantine rodent inspector looks for is rat guards. Rat guards are recommended for use in all ports, including the United States. Why?? Because rodents can be found just about anywhere, and they are capable of climbing aboard ships just by using the lines that are tied up to the pier. Hence, the need for rat guards. BUMEDINST 6250.14 explains the detailed specifications required for an effective rat guard. The diameter has to be at least 36 inches and the steel should be 18 gauge. They should also be cone-shaped, with the pointed end towards the ship. They should be placed at least six feet from the pier and two feet from the ship. If two or more lines are close together, two lines can be contained with one rat guard, or the rat guards should be placed side by side to prevent rodents from jumping over

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Preventing Rodent Infestations **Continued from page 15**

them. Any gaps in the sleeve area should be filled in by material which is securely fitted.

The next thing the inspector will want to do is come on board and do a visual inspection of the dry store areas, the food service spaces and mess decks, berthing spaces and linehandling/storage spaces. Signs they look for are gnaw marks on dry store packaging, rodent droppings, urine deposits via a wood's lamp, rodent hairs, tracks, rub marks on bulkheads and for live or dead rodents. Chances are that if your ship was already infested, you would know it, and your crew members would have already informed you. But this inspection is still necessary to rule out the possibility.

If there is a rodent infestation on board your ship, a derat exemption certificate will not be issued until the infestation is eliminated and a reinspection has taken place. Assistance for deratting can be requested from a Navy Entomologist at the nearest Navy Environmental and Preventive Medicine Unit (NEPMU).

It is important to remember that preventing an infestation from occurring in the first place is your best bet. If you let your guard down and get too complacent, chances are, your ship will eventually have a rodent infestation, and many crew members, not to mention the skipper, will be in an uproar. It is better to follow these common sense rules diligently:

1. ALWAYS use your rat guards when the ship is in port.
2. Inspect ALL incoming food stores for signs of infestation; reject any item which may be infested.
3. Follow basic sanitary guidelines for food service spaces and store rooms.
4. Do regular rodent inspections yourself.
5. Ensure that gangways and brows are well lit.
6. Take complaints from your fellow crew members seriously and follow up on them.
7. Call your nearest NEPMU for further guidance.

Besides being a serious morale problem, rodents can carry some very deadly diseases. A few examples include the plague, leptospirosis, rat bite fever, hemorrhagic fever with renal syndrome and many others. Rodents consume and destroy millions of dollars worth of food stores. They actually destroy ten times as much as they eat. They can also carry ticks and fleas on them, which also are capable of carrying and spreading various communicable diseases. Besides having a rodent infestation on board your vessel, you may also end up with a flea infestation. Now you know why the Navy requires you to have these inspections conducted so often.

For more information on derats, prevention of rodent infestations and for rodent control, the following publications can be consulted:

Navy-Wide Shipboard Pest Control Manual
NAVMED P-5010, Chapter 8
BUMEDINST 6250.14
CINCLANTFLTINST 5400.2
CINCPACFLTINST 5440.3

HM1 Carson,
Environmental Health Department, NEPMU-7

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Lessons Learned...XRF Lead-based Paint Analyzer **Continued from page 9**

weight per cent and there is no accurate method for conversion.

2) The instrument contains a small quantity of a radioactive material. Thus, you must hold a Navy Radioactive Material Permit (NRMP) and comply with all the regulations contained herein.

3) You must identify a Radiation Safety Officer and an Assistant Radiation Safety Officer on the NRMP.These personnel must attend an intense 2-week course on Radiation Safety.

4) Approximately 400 man-hours per year are spent on training, program auditing, and other miscellaneous requirements for complying with the NRMP.

5) The initial cost of the instrument is between $10 and $15K.

6) The instrument must be sent back to the manufacturer every 2-3 years for update of the software and to put a new radioactive source in it. This costs approximately $3000.

7) Manufacturer training is required for each user of the instrument. This class costs $250 each plus TAD expenses for 1-2 days. With the high turnover of military personnel this expense can be substantial.

8) The ships have not responded as we had anticipated. We released a message which offered our lead survey services with the XRF. Over the period of one year after the message was released, only 2 ships responded.

In summary, we have found that analysis of painted surfaces with an XRF analyzer is not an acceptable method for determining the absence of lead-based paint. As the technology of the XRF improves and if OSHA establishes a standard for these instruments, they may one day prove to be a viable method for this analysis.

LT L. A. Combs-Walker, MSC, USN
Industrial Hygiene Dept., NEPMU-2

Welcome to the world of Pheromone Traps - a viable option for stored product pests

How much time and money was wasted when you had to survey and throw away egg noodles infested with Saw-tooth grain beetles, or those bags of flour infested with Confused flour beetles? Wish there was a better way to determine the presence or absence of insects in stored food products? Pheromone baited traps are an excellent tool to determine the presence of potentially harmful pest insects where stored food products are held.

What are pheromones? Pheromones (pronounced fer-a-mon) are chemical substances produced by insects and used to communicate to each other. The term pheromone comes from two Greek words: pherin, which means "to carry" and homan, which means "to excite or stimulate." Synthetic organic pheromones have been in use for many years, with the first stored product insect pheromone discovered in 1972 for the Indian meal moth. There are over 200 synthetically produced pheromones commercially targeted for insect pests.

There are several types of pheromone traps currently being used by the pest control industry. These include sex attractant, aggregation, and food attractant pheromones. Naturally occurring sex-attractant pheromones increase the chances of successful mating. Aggregation pheromones increase the number of insects in the vicinity of the pheromone source. Food attractants will lure pests into a trap, and when used in combination with sex-attractant and aggregation pheromones, they can increase a trap's total catch.

Pheromone traps are available for the more common stored product pests such as the Indian Meal moth, Confused/Red Flour beetle, Cigarette beetle, and Saw-tooth Grain beetle. The traps come in different styles. The most common types use some sort of cardboard covered with a sticky material which traps the insects. The synthetic pheromone lures the insects to the sticky traps.

Continued next two columns

The newest entrant in this field is the German Cockroach pheromone trap, which lures roaches from their harborages and traps nymphs, adults and their eggs cases.

Pheromone traps are great tools to **detect, monitor and reduce** populations of insects that contaminate large quantities of stored products. Traps can be used to survey food stores; identify pests; determine the extent of the problem and evaluate a particular treatment or control method. Because the pheromone actually lures the insect to a trap, the amount of time needed to inspect and find infestations is greatly reduced. Surveys of storerooms and large warehouses can be conducted in less time. Food products can be inspected faster and infested products discovered before they spread. Pheromone traps can also be used to indicate a need for spraying or to monitor the success of pesticide spraying, particularly after a clean-out of infested storerooms.

The key to utilizing pheromone traps effectively in your pest control program is keeping good records. Record trap counts at each visit. Inspect traps weekly and preferably on the same day. Remove insects from the traps each week and replace the lure(s) when recommended by the manufacturer. Replace traps when dusty or overloaded with insects.

Pheromone traps can be an important tool in your pest control program for stored product pests. By detecting and monitoring insect populations, changes can be observed, patterns can be predicted and expensive outbreaks can be prevented.

HM1 F. V. Johnson
Entomology Dept., NEPMU-2

NSN STOCK NUMBERS:

NSN 6840-01-414-8117
Part #3653-13
Description: Wing Trap Kit, Pheromone 1C Trap Kit (3 traps, 3 sticky liners, 3 lures)

NSN 6840-01-414-8118
Part #3153-25
Description: Wing Trap Kit for Indian meal moth

NSN 6840-01-414-8123
Part #3156-25
Description: Wing Trap Kit for Confused and Red flour beetle

NSN 6840-01-414-8124
Part #3155-25
Description: Wing Trap Kit for Khapra and Warehouse beetle

NSN 6840-01-414-9391
Part #3565-05
Description: Storgard FLIT-TRAK M2 for Khapra and Warehouse beetle

NSN 6840-01-414-9393
Part #3566-05
Description: Storgard FLIT-TRAK M2 for Red and Confused flour beetle

NSN 6840-01-414-9395
Part #3567-05
Description: Storgard FLIT-TRAK M2 for Sawtoothed grain and Merchant grain beetles

NSN 6840-01-414-9397
Part #3162-25
Description: Wing Trap Lure for Cigarette beetle

NSN 6840-01-414-9399
Part #3158-25
Description: Wing Trap Lure for Lesser grain borer

** **OPEN PURCHASE** ** for German Cockroach Pheromone traps Contact nearest Medical Entomologist for approval

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